obtaining gain information of said synthesized speech using a relation of said synthesized speech and said input speech signal,

wherein said stochastic codebook has an instructor that instructs an excitation vector to be acquired from said first subcodebook and said second subcodebook corresponding to a distance between excitation vectors in said first subcodebook and a switch that switches between outputs of the excitation vectors in said first subcodebook and said second subcodebook according to the instruction by said instructor.--

REMARKS

By entry of the present amendment, claims 1, 3-6, 8-17 will have been amended to clarify the recitations of Applicants' invention and claims 2 and 7 will have been canceled.

Moreover, with regard to the amendments, amended claim 1 now includes the elements of old claim 2; amended claim 5 now includes the elements of the old claim 1; amended claim 6 now includes the elements of the old claim 7; amended claim 10 now includes the elements of the old claim 6; amended claim 11 now includes the elements of the old claim 2; amended claim 17 now includes the elements of old claim 2; new claim 18 includes the elements of old claims 5 and 11; and new claim 20 includes the elements of old claims 5 and 17. Based on the foregoing, for example, Applicants submit that none of the amended claims or new claims include new matter.

Applicants respectfully traverse the Examiner's 35 U.S.C. §102(e) rejection of claims 1, 11-12, and 15 as being anticipated by MINDE et al.

With regard to independent claims 1 and 11, Applicants assert that MINDE et al. fail to disclose a controller that controls a gain for respective excitation vectors in a first subcodebook and a second subcodebook corresponding to a distance between pulses of the excitation vectors in said first subcodebook as recited in claims 1 and 11. Instead, MINDE et al. disclose in Fig. 12, outputs MPE 34 and TBPE 36 multiplied by <u>fixed</u> values gM and gT and added. For at least this reason, Applicants submit that MINDE et al. does not include each and every element recited in claims 1 and 11, an that claims 1 and 11 are not anticipated thereby under 35 U.S.C. §102(e).

With regard to independent claim 15, Applicants assert that MINDE et al. fail to disclose selecting an excitation vector in either a first subcodebook or a second subcodebook corresponding to a distance between pulses of excitation vectors as recited in claim 15. Instead, MINDE et al. disclose in Fig. 12, outputs MPE 34 and TBPE 36 multiplied by <u>fixed</u> values gM and gT and added. For at least this reason, Applicants submit that MINDE et al. fails to anticipate claim 15 under 35 U.S.C. §102(e).

With regard to claim 12 Applicants assert that claim 12 is allowable because of its own merits and at least because it depends from independent claim 11 which Applicants submit has been shown to be allowable.

Based on the foregoing, Applicants respectfully request the 35 U.S.C. §102(e) rejection of claims 1, 11-12, and 15 be withdrawn and claims 1, 11-12, and 15 be allowed.

Applicants also respectfully traverse the Examiner's 35 U.S.C. §103(a) rejection of claims 2-10, 13-14, and 16-17 as being unpatentable over MINDE et al. in view of ZINSER.

With regard to claims 2 and 7, Applicants assert that the rejection of claims 2 and 7 is moot given the cancellation of claims 2 and 7.

With regard to independent claims 5 and 10, Applicants submit that neither MINDE et al., ZINSER, nor any proper combination, thereof, disclose an instructor that instructs an excitation vector to be acquired from a first subcodebook and said second subcodebook corresponding to a distance between excitation vectors in said first subcodebook as recited in independent claims 5 and 10. Instead, MINDE et al. disclose in Fig. 12, outputs MPE 34 and TBPE 36 multiplied by <u>fixed</u> values gM and gT and added. The fixed values of MINDE et al. are much different from the present invention in that it does not take into consideration the distance between excitation vectors as recited in claims 5 and 10. ZINSER does not appear to supply the deficiencies of MINDE et al.

With regard to independent claims 6, 13, and 17, Applicants submit that neither MINDE et al., ZINSER, nor any proper combination, thereof, disclose a controller that controls a gain for respective excitation vectors in a first subcodebook and a second

subcodebook corresponding to a distance between pulses of the excitation vectors in said first subcodebook as recited in claims 6, 13, and 17. Instead, MINDE et al. disclose in Fig. 12, outputs MPE 34 and TBPE 36 multiplied by fixed values gM and gT and added. ZINSER does not appear to supply the deficiencies of MINDE et al.

With regard to dependent claims 3, 4, 8, 9, 14, and 16, Applicants assert that they are allowable on their own merits and at least because they depend from independent claims 1, 6, 13, and 15 which Applicants submit have been shown to be allowable.

Based on the foregoing, Applicants respectfully request the 35 U.S.C. §103(a) rejection of claims 2-10, 13-14, and 16-17 be withdrawn and claims 3-6, 9, 10, 13-14, and 16-17 be allowed.

With regard to new claims 18 and 20, Applicants assert that neither MINDE et al., ZINSER, or any proper combination thereof, disclose an instructor that instructs an excitation vector to be acquired from a first subcodebook and said second subcodebook corresponding to a distance between excitation vectors in said first subcodebook as recited in independent claims 18 and 20.

With regard to dependent claim 19, Applicants assert that it is allowable on its own merits and at least because it depends from independent claim 18 which Applicants submit has been shown to be allowable.

Based on the foregoing, Applicants respectfully request claims 18-20 be allowed.

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SUMMARY AND CONCLUSION

Applicants have made a sincere effort to place the present application in condition for allowance and believe that they have now done so.

Any amendments to the claims which have been made in this amendment, and which have not been specifically noted to overcome a rejection based upon the prior art, should be considered to have been made for a purpose unrelated to patentability, and no estoppel should be deemed to attach thereto.

Should the Examiner have any questions or comments regarding this Response, or the present application, the Examiner is invited to contact the undersigned at the below-listed telephone number.

Respectfully submitted,
Toshiyuki MORII et al.

William Pieprz Reg No 33630 1/3/03

Bruce H. Bernstein
Reg. No. 29,027

October 3, 2002
GREENBLUM & BERNSTEIN, P.L.C.
1941 Roland Clarke Place
Reston, VA 20191
(703) 716-1191

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MARKED-UP COPY OF THE CLAIMS

1. (Amended) An apparatus for performing speech coding in a CELP system, said apparatus comprising:

an adaptive codebook in which previously synthesized execution signals are stored;

a stochastic codebook in which a plurality of excitation vectors are stored, said stochastic codebook [having]comprising a first subcodebook in which excitation vectors composed of a small number of pulses are stored and a second subcodebook in which excitation vectors composed of a large number of pulses are stored;

[means for obtaining a synthesized speech]a synthesized speech obtainer that obtains synthesized speech using excitation information acquired from said adaptive codebook and said stochastic codebook, using linear prediction coeficients[LPC] obtained by performing linear prediction coeficient[LPC] analysis on an input speech signal;

[means for obtaining gain information for]a gain information obtainer that obtains gain information of said synthesized speech using a relation of said synthesized speech and said input speech signal; and

[means for transmitting]a transmitter that transmits said linear prediction coefficients[LPC], said excitation information and said gain information,

wherein said stochastic codebook comprises a controller that controls a gain for respective excitation vectors in said first subcodebook and said second subcodebook

corresponding to a distance between pulses of the excitation vectors in said first subcodebook and a computation system that obtains the excitation information using the gain controlled excitation vectors.

3. (Amended) The apparatus according to claim 1, wherein said [control means]controller makes the gain [for]of the excitation vectors in said second subcodebook [relatively]small [in a case where]when the distance between pulses of the excitation vectors in said first subcodebook is short, [while]and makes the gain for the excitation vectors in said second subcodebook [relatively]large [in another case where]when the distance between pulses of excitation vectors in said first subcodebook is long.

4. (Amended) The apparatus according to claim 3, wherein said [control means]controller calculates the gain according to a following equation:[1,]

$$g = |P1 - P2| / L \qquad [\ldots \text{ equation (1)}]$$

wherein g is the gain, P1 and P2 are respectively excitation vector posts in first subcodebook, and L is a vector length.

5. (Amended) An apparatus for performing speech coding in a CELP system, said apparatus comprising:

an adaptive codebook in which previously synthesized execution signals are stored;

a stochastic codebook in which a plurality of excitation vectors are stored, said stochastic codebook comprising a first subcodebook in which excitation vectors composed

of a small number of pulses are stored and a second subcodebook in which excitation vectors composed of a large number of pulses are stored;

a synthesized speech obtainer that obtains synthesized speech using excitation information acquired from said adaptive codebook and said stochastic codebook, using linear prediction coefficients obtained by performing linear prediction coefficient analysis on an input speech signal;

a gain information obtainer that obtains gain information for said synthesized speech using a relation of said synthesized speech and said input speech signal; and

a transmitter that transmits said linear prediction coefficients, said excitation information and said gain information.

[The apparatus according to claim 1, said] wherein said stochastic codebook has [instruction means for]an instructor that instructs an excitation vector to be acquired from said first subcodebook and said second subcodebook corresponding to a distance between excitation vectors in said first subcodebook, and [switching means for switching]a switch that switches between outputs of the excitation vectors in said first subcodebook and said second subcodebook according to the instruction by said [instruction means]instructor.

6. (Amended) An apparatus for performing speech coding in a CELP system, said apparatus comprising:

an adaptive codebook in which previously synthesized execution signals are stored;

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a stochastic codebook in which a plurality of excitation vectors are stored, said stochastic codebook [having]comprising a first subcodebook in which excitation vectors [composed of]comprising a small number of pulses are stored and a second subcodebook in which excitation vectors [composed of]comprising a large number of pulses are stored;

[means for obtaining]a synthesized speech obtainer that obtains a synthesized speech using excitation information acquired from said adaptive codebook and said stochastic codebook, using linear prediction coeffiecients[LPC] obtained by performing linear prediction coefficient[LPC] analysis on an input speech signal;

[means for executing]a voice determiner that performs a voiced/unvoiced judgment on said input speech signal using said linear prediction coefficients[LPC];

[means for obtaining]a gain information obtainer that obtains gain information for said synthesized speech using a relation of said synthesized speech and said input speech signal; and

[means for transmitting]a transmitter that transmits said linear prediction coefficients[LPC], said excitation information and said gain information,

wherein said stochastic codebook has a controller that controls a gain for respective excitation vectors in said first subcodebook and said second subcodebook corresponding to a distance between pulses of the excitation vector in said first subcodebook, and a

computation system that obtains the excitation information using the gain controlled excitation vectors.

8. (Amended) The apparatus according to claim 6, wherein said [control means]controller makes the gain for the excitation vector in said second subcodebook [relatively]small [in a case where]when the distance between pulses of excitation vectors in said first subcodebook is short, [while]and makes the gain for the excitation vector in said second subcodebook [relatively]large [in another case where]when the distance between pulses of excitation vectors in said first subcodebook is long.

9. (Amended) The apparatus according to claim [7]6, wherein said [control means]controller calculates the gain according to a following equation:[2,]

$g = |P1-P2| / R$ [. . . equation (2)]

wherein g is the gain, P1 and P2 are respectively excitation vector positions in said first subcodebook, and R represents a weighting coefficient and is a vector length L [in a case where]when a result of the voiced / unvoiced judgment indicates a voiced speech, and L X 0.5 [in another case where]when the result of the voiced / unvoiced judgment indicates an unvoiced speech.

10. (Amended) An apparatus for performing speech coding in a CELP system, said apparatus comprising:

an adaptive codebook in which previously synthesized execution signals are stored;

a stochastic codebook in which a plurality of excitation vectors are stored, said stochastic codebook comprising a first subcodebook in which excitation vectors comprising a small number of pulses are stored and a second subcodebook in which excitation vectors comprising a large number of pulses are stored;

a synthesized speech obtainer that obtains a synthesized speech using excitation information acquired from said adaptive codebook and said stochastic codebook, using linear prediction coefficients obtained by performing linear prediction coefficient analysis on an input speech signal;

a determiner that performs a voiced/unvoiced judgment on said input speech signal using said linear prediction coefficients;

a gain information obtainer that obtains gain information for said synthesized speech using a relation of said synthesized speech and said input speech signal; and

a transmitter that transmits said linear prediction coefficients, said excitation information and said gain information.

[The apparatus according to claim 6,] wherein said stochastic codebook [has]comprises [instruction means for instructing]an instructor that instructs an excitation vector to be acquired from said first subcodebook and said second subcodebook corresponding to a distance between excitation vectors of said first subcodebook, and [switching means for switching]a switch that switches between outputs of the excitation

vectors in said first subcodebook and said second subcodebook according to the instruction by said [instruction means]instructor.

11. (Amended) An apparatus for performing speech coding in a CELP system, said apparatus comprising:

an adaptive codebook in which previously synthesized excitation signals are stored;

a stochastic codebook in which a plurality of excitation vectors are stored, said stochastic codebook [having]comprising a first subcodebook in which excitation vectors [composed of]comprising a small number of pulses are stored and a second subcodebook in which excitation vectors [composed of]comprising a large number of pulses are stored;

[means for receiving]a receiver that receives linear prediction coefficients[LPC], excitation information and gain information transmitted from a coding side; and

[means for decoding]a speech decoder that decodes a speech using said excitation information multiplied by said gain information, and said prediction coefficients[LPC],

wherein said stochastic codebook has a controller that controls a gain for respective excitation vectors in said first subcodebook and said second subcodebook corresponding to a distance between pulses of the excitation vectors in said first subcodebook and a computation system that obtains the excitation information using the gain controlled excitation vectors.

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12. (Amended) The apparatus according to claim 11, wherein said apparatus further comprises [means for providing]a linear prediction coefficient provider that provides said linear prediction coefficients[LPC] to said stochastic codebook.

13. (Amended) A method for performing speech coding in a CELP system, said method comprising[the steps of]:

controlling a gain for respective excitation vectors in a first subcodebook and a second subcodebook corresponding to a [distant]distance between pulses of excitation vectors in said first subcodebook of a stochastic codebook having said first subcodebook of a stochastic codebook [having]comprising said first subcodebook in which excitation vectors [composed of]comprising a small number of pulses are stored and said second subcodebook in which excitation vectors [composed of]comprising a large number of pulses are stored;

obtaining excitation information using gain controlled excitation vectors;

obtaining a synthesized speech using excitation information acquired from an adaptive codebook and said stochastic codebook, using linear prediction coefficients[LPC] obtained by performing linear prediction coefficient[LPC] analysis on an input speech signal; and

obtaining gain information for said synthesized speech using a relation of said synthesized speech and said input speech signal.

14. (Amended) The method according to claim 13, wherein said method further comprises [the step of] performing a voiced / unvoiced judgment on said input speech signal using said linear prediction coefficients[LPC].

15. (Amended) A method for performing speech coding in a CELP system, said method comprising[the steps of]:

selecting an excitation vector in [either]at least one of a first subcodebook [or]and a second subcodebook corresponding to a [distant]distance between pulses of excitation vectors in said first subcodebook of a stochastic codebook having said first subcodebook in which excitation vectors [composed of]comprising a small number of pulses are stored and said second subcodebook in which excitation vectors [composed of]comprising a large number of pulses are stored;

obtaining excitation information using the selected excitation vector;

obtaining a synthesized speech using excitation formation acquired from an adaptive codebook and said stochastic codebook, using linear prediction coefficients[LPC] obtained by performing linear prediction coefficient[LPC] analysis on an input speech signal; and

obtaining gain information [for]of said synthesized speech using a relation of said synthesized speech and said input speech signal.

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16. (Amended) The method according to claim 15, wherein said method further comprises [the step of]performing a voiced/unvoiced judgment on said input speech signal using said linear prediction coefficients[LPC].

17. (Amended) A recording medium readable by a computer, said medium storing a speech coding program comprising an adaptive codebook in which previously synthesized excitation signals are stored, and a stochastic codebook in which a plurality of excitation vectors are stored, said stochastic codebook having a first subcodebook in which excitation vectors [composed of]comprising a small number of pulses are stored and a second subcodebook in which excitation vectors [composed of]comprising a large number of pulses are stored, said program including [the procedures of]computer instructions comprising:

controlling a gain for respective excitation vectors in said first subcodebook and said second subcodebook corresponding to a [distant]distance between pulses of excitation vectors in said first subcodebook of said stochastic codebook;

obtaining excitation information using gain controlled excitation vectors;

obtaining a synthesized speech using excitation information acquired from said adaptive codebook and said stochastic codebook, using linear prediction coefficients[LPC] obtained by performing linear prediction coefficient[LPC] analysis on an input speech signal; and

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obtaining gain information for said synthesized speech using a relation of said synthesized speech and said input speech signal,

wherein said stochastic codebook has a controller that controls a gain for respective excitation vectors in said first subcodebook and said second subcodebook corresponding to a distance between pulses of the excitation vectors in said first subcodebook and a computation system that obtains the excitation information using the gain controlled excitation vectors.